

### Preparation and characterization of Cu-based catalysts for methanol synthesis in MeOH-FPSO process

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It is well known that carbon dioxide emissions have induced green house effect. The key technology of reducing CO<sub>2</sub> emission has received much attention recently. Indeed, catalytic hydrogenation of carbon dioxide to methanol is one of the attractive approaches, since methanol is a key material for many chemicals, as well as an alternative energy substitute for the oil-based fuels.

In this work, methanol synthesis over Cu-based catalyst as a preliminary research for design of compact methanol reactor was performed in a temperature range from 210 to 260 °C at 30 bar with space velocity of 5,000 h<sup>-1</sup> and feed molar ratios of H<sub>2</sub>/CO/CO<sub>2</sub> = 2/1/0.1~0.5. Cu-based catalysts were prepared by co-precipitation and incipient wetness impregnation methods. The catalysts were characterized by N<sub>2</sub> physisorption, CO chemisorption, TPR, TPO, XRD, and TEM techniques.